

# Snow (N. L.)

SOME PRACTICAL FACTS

IN

## FRACTURES OF THE THIGH,

*VERIFIED BY THE TREATMENT OF TWENTY-FIVE  
CASES OCCURRING IN PRIVATE PRACTICE.*

BY

NORMAN L. SNOW, A. M., M. D.,  
OF ALBANY, N. Y.

[READ AT THE MEETING OF THE NEW YORK STATE MEDICAL  
SOCIETY, FEBRUARY, 1879.]



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*Fractures of the  
Thigh in Men.*

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## SOME PRACTICAL FACTS IN FRACTURES OF THE THIGH, VERIFIED BY THE TREATMENT OF TWENTY-FIVE CASES OCCURRING IN PRIVATE PRACTICE.

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THE treatment of fracture of the femur is always undertaken with some anxiety by the surgeon. We have all, doubtless, had more or less experience with cases coming under this head, and I think I will be borne out in the statement that a review of the cases shows them to be of more than ordinary interest.

The femur is a long bone, and is not supported by any companion, as are most of the bones of the extremities ; and, consequently, any variation in length, or rotation to the right or left during its treatment, has a marked effect on the result. Its peculiar relations to the body and its importance in locomotion render all the more obvious any deformity which may be found to exist after union. Hence the anxiety which the surgeon feels concerning not only the patient's comfort, but also his own reputation.

In my private practice, I have treated twenty-five cases—the results of which have taken me pretty well through the vocabulary. It is not my intention, however, to take up the society's time by an enumeration of the cases in full, but the treatment and results of a few may prove of interest to the every day practitioner, who is desirous of obtaining practical facts only. And all the more is this true, because of the too common practice of reporting only those cases whose termination is favorable. All the cases were treated by extension

and counter-extension, the amount of force employed depending entirely upon the obliquity of the fracture and rigidity of the muscles. Extension dates back so many years, and has come into so general use among our own country surgeons, that I was much surprised when, in visiting some of the foreign hospitals—more especially those in London—some few years since, I found patients under treatment without it.

One of the beneficial results of this mode of treatment is the dispensing almost entirely with bandaging. Tight bandaging is very often not only the cause of delayed union, but non-union. The thigh differing from the extremities where two bones side by side protect the blood vessels, thereby allowing compression if necessary on all sides, this compression in the thigh causes the circulation of the whole leg to become obstructed and inactive; consequently, at a time when it should be most free, it is most impeded. This latter reason I believe to be one of the main causes of the greater frequency of ununited fractures occurring in both the humerus and femur. To properly care for a fracture of the above description, it is necessary to have as follows:

First: a fracture bed, on which may be placed a good, hard mattress. Second: a few short splints, and some simple arrangement, whereby extension may be applied by weight and pulley. Third: a couple of long sand bags to be used as supports for the limb; and lastly, the foot of the bed raised a few inches, thereby causing the weight of body to act as the counter-extension.

Among the first of the cases that I treated, and one which gave me far more anxiety than any since, was that of a young man, aged seventeen, tall and slender, who, while attempting to secure an unruly team attached to a heavily laden wagon, was thrown down, the hind wheel passing over his right thigh, producing a fracture of the bone at the upper portion of the middle third. It was very oblique, ends widely separated, and soft parts evidently much contused and lacerated, though not to a degree sufficient to admit of <sup>the</sup> extension of either fragment. The patient was placed on a firm bed, with a hard mattress, the leg was bandaged from the foot up,

short, narrow splints were placed about the thigh, and held firmly in position by a many tailed bandage. On the outside of this, the long splint extended from near the axilla to below the foot. This was attached to the foot piece, which was lengthened with a screw, while the counter-extension was the perineal belt. In consequence of the injury to the soft parts, it was necessary to remove the dressing quite often from the thigh, and this could be done very easily without disturbing the other dressing. The patient apparently did well for the first month, when he was attacked with pneumonia, from which it could hardly be said he had recovered at the end of another month. At this time—the end of the eighth week—on examination of the limb, a comparatively easy matter, owing to the shrunken condition of the muscles, there was found to be not only non-union—the fractured ends being readily movable—but very little callus. He was given the usual tonics, and such other medication as was thought necessary to assist in bone formation for another month. At the end of the third month, although there was not satisfactory union, the health of the patient required that he should be allowed more freedom. A starch bandage was applied to the whole extent of the leg, he was allowed to get up, move about on crutches, and apply a little direct pressure on the foot. His general health improved, the callus began to be more appreciable, and the bone gradually became fixed. But not until six months had passed was it sufficiently firm to hold his weight. He thus recovered after a delayed union. The ends of the fracture rounded off, and the leg was as straight as could be wished for, but it was three inches shorter, for which deformity it was necessary to wear a cork lift.

The next case of interest was that of a young man who fell from a walnut tree to the ground, a distance of thirty feet, the intervening limbs breaking the force of the fall somewhat. With other injuries, he received an oblique fracture of the right thigh in the lower part of the middle third. In consequence of the great obliquity, the soft parts were much contused by the over-riding ends of bone, and this same cause also prevented the perfect apposition desirable. After confinement for two months, union appeared pretty

firm, and a starch bandage was applied. The patient was allowed to exercise with crutches, and was cautioned to bear only partial weight of body on the leg. He had enjoyed himself in this way but a few days when a sad mishap befell him. While walking the street, he was run into by a large dog—the dog's nose striking him in the popliteal space of the sound leg—his whole weight was thus thrown momentarily on the fractured limb, and owing probably more to the peculiar twist of the body than to any direct pressure, the limb gave way and he fell. He was again placed on the bed, and the examination showed a complete separation at the point of the original fracture. There was extensive swelling and discoloration for a number of days. Nature again commenced her work of repair, and in six weeks the patient was a second time able to make his appearance on the street. Union took place faster, and recovery was more safe and satisfactory, with a better coaptation of the fractured ends than at first.

A somewhat similar case to the one just mentioned was that of H. F., aged thirty-five, strong and healthy, who received an oblique fracture of the middle third of the left thigh from the wheel of a large wagon passing over it. There was much contusion of the soft parts, and an amount of blood extravasated in and above the seat of injury. The patient was placed on a fracture bed, and treated in the usual manner. I will not give a full history of the case, as in many respects it followed the usual course, but will relate an incident which occurred during the treatment, as it suffices to show how deceived we may be if we get in the habit of trusting to comparatively similar cases, having a somewhat general termination.

It was at the end of the sixth week that Dr. H. S. Hendee, an army acquaintance, who was at the time my guest, accompanied me to the patient's home, for the purpose of assisting in an examination of the limb. We both supposed that there had been sufficient time for, and that there was, quite firm union; judge our surprise when, by the most gentle efforts at flexing the knee, the bone gave way at the point of injury. As I have said, the efforts made were of the mildest, the limb

in fact being scarcely raised from its resting place, and yet such was the lack of callus that even this slight strain served to undo the repairs of weeks. The consequence was that the same ground had again to be traversed, but this time with more gratifying results, for after confinement to bed, with weight and pulleys, for three weeks more, union was found to have taken place. A starch bandage was applied, and the patient allowed to get up and use the limb. Careful measurement in this case, after recovery was complete, showed three quarters of an inch shortening.

In connection with this, I will mention a case of non-union. It did not properly come under my care, but I saw it with a neighboring physician, and will mention it simply as one of interest. The patient, L. M., was seventy-five years of age. Some eight years previous she received an intra-capsular fracture of the neck of femur, which never united. She was able to get about only with the assistance of a cane or crutch. While moving about in this way, she unfortunately fell and fractured the same thigh in the middle third. Soon after this mishap a mild delirium came on, in consequence of which it was impossible to confine her in any one position. The fracture was nearly transverse, and in her movements there was occasioned very little pain or irritation. She remained in this state for six months, rolling and tossing the leg from side to side, and died. Examination of the fracture showed a large amount of callus thrown out about the ends of the bone. Week after week nature had made and repeated the attempt to fasten them, until the ends were rounded and thickened to full three times their natural size, still leaving them movable, with a slight ligamentous union. This specimen would have been of value to exhibit in consequence of the two fractures, but we were unable to get it.

My next case of interest was that of a little boy, aged eight, frail and unhealthy. The bone must have been very brittle, as the fall which occasioned the fracture was a comparatively slight one. The separation occurred in the middle third. His weak constitution and strumous appearance impressed me with the belief that union might not be as speedy and as good as desirable, and even this fear was of minor im-

port when contrasted with the danger from whooping cough. This had already been of two weeks' duration, and such was its severity that at a later period his life was despairful. Fortunately, however, the termination was a favorable one, and notwithstanding the unusual severity of the paroxysm, the limb—through the aid of the long axillary splint used—was kept almost immovable, so that union progressed even more favorably than was anticipated, and a good result was obtained in six weeks.

As the treatment of the foregoing case was in some respects different from those previously related—mainly so because of the age of the patient—I will relate it briefly. The patient was placed at the time of his injury, and afterward remained, on a high lounge with end, but no side pieces. This in children I find preferable to a bed, as there is nothing by which they can possibly gain hold, and thereby attempt to draw themselves into nearly a sitting posture, and being high up they seem more contented to lie on their backs. The dressing of the fractured limb was very much after the usual method. The shortening, if any, was trifling.

In connection with this I will mention two other cases occurring in children. The first, a child of two years, fractured the left thigh in the lower third by falling down stairs. Much anxiety was expressed by the parents concerning the prospect of keeping the little one confined on its back and quiet. Some difficulty was experienced for the first few days, but it soon became reconciled to its fate, and no more trouble was had. In the treatment of these little ones, my experience has been that they bear confinement in one position fully as well as their seniors. In this last case, and one that followed in a child some years older, there was good union, and no perceptible shortening in six weeks.

The case of J. M. R. illustrates in a marked degree a class of cases which are fortunately extremely rare, *viz.*, the repeated breaking, and as often successive mending, of some of the long bones. This patient first fractured his thigh bone at the age of ten years by falling down stairs. He resided at that time in New York city, and was treated at one of the hospitals there. The injury was in the upper third, and he

recovered with marked shortening. The second accident befell him while a resident of some western town. In this instance he had fallen from a hay-stack, and broken the bone just below the previous union. Although there had undoubtedly been sufficient callus, yet through his or some one's neglect, there had been produced a most vicious union, with at least six inches shortening, and a very marked angle. At the time I visited him he had just met with the third of these misfortunes, and this time by a fall also. The bone was fractured about three inches below the last one—the lower portion of the middle third. The peculiar shape of the leg, and the great obliquity of fracture, rendered every attempt at direct extension entirely out of the question, as it only served to separate still more widely the broken ends. The leg was therefore dressed with the long splint and foot piece, with plenty of padding to overcome the deformity. He recovered nicely in two months, and regarded his leg as strong as before; also thought it had gained a little in length. It is ten years since I treated this man, and you may imagine my surprise when, while visiting one of the city hospitals a few weeks since, I found him again under treatment. This was the fourth fracture to the same bone, and had occurred a little below the others. He is now but twenty-seven, and aside from deformity seems healthy. In each instance the fracture was by direct violence, and each time nature had been equal to the necessary repairs.

The next case to which I call your attention is that of a fracture occurring in a bone already seriously impaired by disease, and notwithstanding which good union resulted.

Mr. S., aged twenty-eight, has for several years suffered from a diseased femur, which at the time of the accident had evidently partly recovered. He could bear some weight upon it, but was unable to move any distance unaided by crutches or other support. One day while walking in this way he received a fall, resulting in a fracture of the diseased bone. When I called to see him he was sitting bolt upright on the edge of the bed, and any movement of the limb caused such severe pain that it was necessary, in order to fully ascertain the ex-

tent of injury, to resort to anæsthesia. Before consciousness returned the fracture was reduced, he was placed in a proper position on an appropriate bed, and extension, etc., applied. A few days later the limb was encased in the plaster of Paris dressing, a *fenestra* being left to provide for the discharge from the sinus, and in this condition the limb was left. The case progressed admirably, good union taking place; so that by the tenth week he was able to move about on crutches full as well as before the accident.

Four cases of compound fracture, three of which were railway injuries, died during the first week; and here permit me to remark that any injury severe enough in its nature to produce this variety of fracture in so long and strong a bone, surrounded as it is by the most resisting and powerful of muscles, bounded on all sides by a congeries of nerves and blood-vessels, themselves of more than ordinary size and importance, renders it at once plainly evident why it is that under such conditions the system generally suffers so severe a shock. To this should be added, especially in railway accidents, the fact that in rare cases only does it happen that the sufferer can receive the needed aid at once. There is thus a necessity for more or less handling, or interference of some sort, and it so happens that, with an injury in itself grave, there is super-added a combination of misfortunes which reflect very seriously on the patient's future welfare. In all three of these cases there was considerable external violence from which the soft parts suffered, aside from extensive injury to other portions of the body.

The remainder of my cases were treated with extension by weight and pulley, with results varying from one inch to that of no perceptible shortening, with the exception of one, in which there was also injury to the knee-joint. This resulted in suppuration, and afterward made amputation necessary.

In children, or say persons under ten years, a simple, uncomplicated fracture of the thigh is somewhat different in form, and requires a modification in treatment, when compared with the same injury to the adult. It is more likely to

be of the form known as "greenstick," being bent at an angle instead of broken ; but if forced beyond this point it gives way, usually transversely to the long axis, and the ends are found to be quite jagged and irregular. There is, however, this advantage : there is no over-riding of the parts, and the bone is quite easily forced into proper position. Then comes the important question, Can they be kept quiet for a length of time ? We have mentioned before that the first object to be attained is to prevent their assuming a sitting posture, and also that they may not make of the unfortunate leg a center about which to rotate the other and even the body. The long splint fastened well to the body and running down past the foot of the injured limb answers a nice purpose. The sound leg may be covered with a knit drawer or a long stocking made to extend below the foot, and tied at an angle to the side of the bed. The little one thus hampered will in most instances quietly submit, the dressing can be nicely adjusted, and but little trouble will be experienced during the treatment.

In the earlier days of treatment of this fracture in children, plaster of Paris should be entirely abandoned. The thigh does not consist of the hard muscular tissues found in the adult, but on the contrary they are soft and yielding. Now if the bandage be applied firmly, there is danger of strangulation and sloughing ; and if not thus applied, the soft part soon shrinks away, leaving the leg loose and without support. Very little need be feared for the result in children, but little extension is necessary, and there is rarely any noticeable shortening.

Dr. Hamilton in the "Medical Record" of one year ago, described his method of treating these cases in children, which was to embrace both legs by a double frame-work somewhat longer than the limbs, and which was joined together below the feet by a cross piece, thus keeping them at once separated and stationary. I have not had an opportunity for trying it. I have mentioned the disadvantage of plaster dressings in the case of children, and I take this opportunity to say that I have never felt at ease when applying it in simple fracture

occurring in the adult, as during the first four weeks an examination ought occasionally to be made to satisfy us that the ends are in proper apposition: a duty to which this dressing offers quite an impediment. Then too, however nicely it may be put on, in a few days there is found quite a space between the limb and its encasement, sufficient for distinct motion, and even displacement. After sufficient callus has been thrown out to keep the fractured ends in apposition, and some movement of the leg can be made with safety, then, and not till then, and simply as an additional support, can this form of dressing be made practically useful. There is a condition of fracture, however, which justifies its use. I speak now of compound, and also one in a bone diseased, where, from the sinuses present, a constant discharge is kept up. In either of these cases it serves an excellent purpose; and in the case of continuous discharges, a properly constructed *fenestra* obviates the whole difficulty.

A great deal has been said and written concerning the fracture of this bone, and principally because of the tendency toward limb-shortening and consequent deformity. My experience has been, that these results depend very much, first, on the obliquity of the fracture; second, the age of the patient, and amount of injury to the soft parts. The bone having been broken, the support to the body is lost, the sharp end pierces the tissues, acting, indeed, like foreign bodies, the irritated and irritable muscular fibers contract strongly, the severed ends are thus drawn one over the other, and therefore, before they can be properly replaced—if it can be said they ever are—much real force must be exerted, and a modicum of this force kept constantly in operation during the whole time of treatment.

It therefore follows—other things being equal—that the more oblique the fracture, the sharper the ends, the more will be the irritation, laceration, and contraction of the parts around, and consequently it is that we are at times disappointed with results in these cases after weeks of careful watchfulness and anxiety.

## TABULATED STATEMENT OF THE FOREGOING CASES.

NAME.	Age.	Situation and Character of Fracture of the Femur.	Term of Treatment.	Result.
E. S.	17 yrs,	Right, middle third, very oblique.	Six weeks.....	Shortened 3 inches.
H. F.	35 "	Left, middle third, very oblique.	Ten weeks.....	Shortened $\frac{1}{2}$ inch.
L. M.	75 "	Right, middle third, slightly oblique.....	Six months.....	Non-union.
E. P.	8 "	Left, middle third, nearly transverse.....	Six weeks.....	No shortening.
A. W.	60 "	Left, upper third, oblique.....	Ten weeks.....	Shortened $\frac{1}{2}$ inch.
E. S.	2 "	Left, lower third, transverse.....	Six weeks.....	No shortening.
J. R.	3 "	Left, middle third, transverse.....	Six weeks.....	No shortening.
J. M. R.	27 "	Right, middle third, third fracture of same bone.....	Two months.....	Shortened 6 inches from previous vicious union.
W. S.	28 "	Right, lower third, compound, with previous necrosis.....	Ten weeks.....	Shortened 1 inch.
L. S.	27 "	Right, lower third, compound, railroad accident.....	One week.....	Death.
J. N.	35 "	Left, middle third, compound, railroad accident.....	Four days.....	Death.
E. M.	12 "	Left, lower third, nearly transverse.....	Six weeks.....	No shortening.
N. F.	11 "	Right, middle third, nearly transverse.....	Six weeks.....	No shortening.
J. O. S.	53 "	Left, lower third, compound, surgical fever.....	Five days.....	Death.
H. M.	62 "	Right, upper third, oblique.....	Ten weeks.....	Shortened 1 inch.
H. A.	25 "	Left, middle third, compound, railroad accident.....	Three days.....	Death.
J. U.	38 "	Right, lower third, impicating condyle and knee.....	Two months, one year before perfect use of joint.	Shortened $\frac{1}{2}$ inch,
J. U. L.	58 "	Left, upper third, oblique.....	Ten weeks.....	Shortened $\frac{1}{2}$ inch.
S. O.	4 "	Right, upper third, transverse.....	Six weeks.....	No shortening.
H. A.	53 "	Right, upper third, oblique.....	Nine weeks.....	Shortened $\frac{1}{2}$ inch.
E. D.	3 "	Right, upper third, very oblique.....	Six weeks.....	Shortened $\frac{1}{2}$ inch.
F. F.	63 "	Right, upper third, oblique.....	Ten weeks.....	Shortened $\frac{1}{2}$ inch.
W. A. B.	12 "	Right, middle third, very oblique.	Two months.....	Shortened $\frac{1}{2}$ inch.
I. R.	34 "	Right, lower third, oblique.....	Two months.....	Shortened $\frac{1}{2}$ inch.
A. S.	16 "	Right, lower third, with injury to and subsequent suppuration of knee joint.....	Four months.....	Amputation and recovery.







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PROFESSOR OF PRINCIPLES AND PRACTICE OF MEDICINE, UNIVERSITY OF MARYLAND; MEMBER OF AMERICAN MEDICAL ASSOCIATION; PRESIDENT OF BALTIMORE ACADEMY OF MEDICINE.

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"L'aisance et les bonnes mœurs sont les meilleures auxiliaires de l'hygiène."—BOUCHARDAT,

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